CLAIMS

1 A graft copolymer having a number average molecular weight of at least 10 000 comprising:
(a) backbone units derived from an ethylenically unsaturated monomer,
(b) hydrophilic uncharged side chains, and
(c) cationically chargeable or charged side chains containing a tertiary or quaternary nitrogen atom.

2 A graft copolymer as claimed in claim 1, wherein the backbone units (a) are units derived from an ethylenically unsaturated carboxylate.

3 A graft copolymer as claimed in claim 2, wherein the backbone units (a) are methacrylate units.

4 A graft copolymer as claimed in claim 1, wherein the units (b) have a chain length of at least 6 carbon atoms, preferably at least 10 carbon atoms.

5 A graft copolymer as claimed in claim 1, wherein the hydrophilic uncharged side chains (b) are polyethylene oxide chains.

6 A graft copolymer as claimed in claim 5, wherein the polyethylene oxide chains comprise at least 3, preferably at least 6, ethylene oxide units.

7 A graft copolymer as claimed in claim 5, wherein the polyethylene oxide chains comprise at least 10, preferably at least 30, polyethylene oxide units.

8 A graft copolymer as claimed in claim 1, wherein the units (c) are units of an ethylenically unsaturated monomer containing an aliphatic or aromatic moiety which contains a tertiary or quaternary nitrogen atom.

9 A graft copolymer as claimed in claim 1, wherein the units (c) are units of a tertiary amine acrylate or methacrylate which may optionally be wholly or partially quaternised.

10 A graft copolymer as claimed in claim 9, wherein the units (c) are units of 2-dimethylaminoethyl methacrylate (DMAEMA) which may optionally be wholly or partially quaternised.

11 A graft copolymer as claimed in claim 1, which comprises:
(a) backbone units of methacrylate,

(b) polyethylene oxide side chains, and
(c) side chains of dimethylaminoethylmethacrylate (DMAEMA) which may optionally be wholly or partially quaternised.

12 A graft copolymer as claimed in claim 11, which comprises from 70 to 99 mole%, in total, of the units (a) and (b), and from 1 to 30 mole% of the units (c).

13 A graft copolymer as claimed in claim 1, having a number average molecular weight of at least 10 000, preferably from 50 000 to 1 000 000, more preferably from 100 000 to 500 000, and a weight average molecular weight of at least 20 000, preferably from 100 000 to 2 000 000, more preferably from 200 000 to 1 000 000.

14 A process for the preparation of a graft polymer as claimed in claim 1, which comprises reacting
(i) a copolymer having backbone units derived from an ethylenically unsaturated monomer and hydrophilic uncharged side chains with
(ii) a monomer containing cationically chargeable or charged side chains containing a tertiary or quaternary nitrogen atom,
in the presence of a free radical initiator.

15 A process as claimed in claim 14, which comprises reacting polyethylene glycol methyl ether methacrylate

(PEGMA) with a tertiary amine acrylate or methacrylate which may optionally be wholly or partially quaternised.

16 A process as claimed in claim 14, which comprises reacting PEGMA with 2-dimethylaminoethyl methacrylate (DMAEMA), optionally in wholly or partly quaternised form.

17 A laundry detergent composition comprising an organic detergent surfactant, and a graft copolymer as claimed in claim 1 in an amount effective to improve soil release.

18 A detergent composition as claimed in claim 17, which contains from 0.1 to 10 wt%, preferably from 0.25 to 5 wt%, of the graft copolymer.

19 A detergent composition as claimed in claim 17, which comprises:

(a) from 5 to 60 wt%, preferably from 10 to 40 wt%, of organic detergent surfactant,

(b) optionally from 5 to 80 wt%, preferably from 10 to 60 wt%, of detergency builder,

(c) from 0.1 to 10 wt%, preferably from 0.25 to 5 wt%, of the graft copolymer, and

(d) optionally other detergent ingredients to 100 wt%.

20 A method of promoting soil release during laundering of a textile fabric, which method comprises contacting the fabric with a graft copolymer as claimed in claim 1, and subsequently washing the fabric after wear or use of the fabric.

21 Use of a graft copolymer as claimed in claim 1, in a laundry detergent composition to promote the release of soil from textile fabrics during laundering.

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